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| EXAMINER | | | | |
| ABOAGYE, MICHAEL | | | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/785,152

Applicant(s)

NAGASE ET AL.

Examiner

MICHAEL ABOAGYE

Art Unit

1793

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 99-158 is/are pending in the application.
- 4a) Of the above claim(s) 137-150 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 99-137 and 150-158 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 99-158 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/888)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 151-156 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kent (US Patent No. 3,315,350) in view of Ghasripoor et al. (US Patent No. 5,997,248).

Kent teaches a soldering iron tip made of a copper core, and forming a oxidation protective layer by plating pure iron layer on said copper core; or wherein said protective layer is made of iron including nickel or cobalt or combinations thereof, with the composition of Iron between 66% and 99.99% by weight (Note Kent teaches both a protective layer made of iron alone i.e. at least iron content not less than 95.5% and when in combination with Nickel or Cobalt, the iron content is approximately 75%. The iron content recited in both claims 151 and 156 are therefore met by Kent) (see, Kent, column 2, lines 5-66).

Kent fails to teach forming oxidation protective layer from sintered particles.

Ghasripoor et al. teaches forming an oxidation protective layer on a blade tip by a method including: electrodepositing, sintering, thermal spraying, or the like (Ghasripoor et al., column 3, lines 28-40). (The examiner recognizes that Ghasripoor et al. does not teach a soldering tip, however, the teachings of Ghasripoor et al. is drawn to an analogous art, in view of the fact that a protective or oxidation resistance coating or

layer is provided for a tool tip, which is similar to the subject matter of the applicant's claimed invention).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the invention of Kent to form the oxidation protection layer by sintering as taught by Ghasripor et al. which would have meant a mere substituting one process variant for the other (Ghasripor et al., column 3, lines 28-40).

3. Claims 99,111-114,116,117,133,135 and 136 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kent (US Patent No. 3,315,350) in view of Ghasripor et al. (US Patent No. 5,997,248) as applied to claim 151 above and further in view of Weller (US Patent No. 5,553,767).

Kent and Ghasripor et al. fail to teach an oxidation protection layer in a form of sintered cap.

Weller teaches a method of forming a soldering iron tip, comprising: providing a copper or copper alloy core having a base portion (32, figure 3) and a forward extension portion which has longitudinal through-passage way (34 of figure 3 and 36 of figure 4), the forward tip portion having a tip end (see the tapered end of 36 of figure 4); applying Ag particles to at least one of an inside surface of a solder tip cap and the forward tip portion; and after the applying, fitting the solder tip cap on the forward tip portion; and after the fitting, brazing the cap to the forward tip portion (column 4, lines 25-31 and lines 47-51, note this cited portion, recites that the forward portion and the

base portion are bonder together by a variety of methods including soldering, welding, or sintering using silver; the examiner interprets broad recitation of metal fusion bonding to include brazing, furthermore bonding by sintering technique implies that the silver bonding medium is in particulate form. It is therefore the position of the examiner that the limitations as claimed in 99 and 114 are met by the disclosure of Weller). Weller teaches forming copper/iron compact composite by die or injection molding followed by heat treatment in a hydrogen atmosphere (note the examiner interprets, Weller's recitation of "shaping by compacting in a mold" to be the same as injection molding), (see, Weller, column 2, lines 18-26, and column 5, lines 54-58). Weller teaches iron cap (column 1, lines 22-23).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify the combined invention of Kent and Ghasripoor et al. to shape the sintered particles into a cap to fit the tip end of the copper core as taught by Weller, since said sintered cap is replaceable, and cheap in terms of manufacturing (Weller, column 1, line 65-column 2, line 10).

4. Claims 105, 119-124 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kent (US Patent No. 3,315,350) in view of Ghasripoor et al. (US Patent No. 5,997,248) as applied to claim 151 above and further in view of Weller (US Patent No. 5,553,767) and Nippert (US Patent No. 4,345,136).

Kent, Ghasripoor et al., and Weller combined do not expressly teach a brazing filler metal ring.

However Nippert teaches brazing two parts (the tip member (31) and the billet (43), figure 5) of a composite electrode member, wherein at least one parts is made of copper; applying silver brazing ring (49, figure 5) therebetween so that a protrusion (45, figure 5) and a recess (49, figure 5) mate, and heating so that the two parts are brazed together (Nippert, abstract, column 5, lines 51-68); wherein the joint so formed is sufficiently strong to substantially withstand distortion during subsequent application (Nippert, column 6, lines 33-36). Furthermore, figures 5 and 6 show, mounting the ring before the inserting; the ring abutting the surface of the extension member (51); wherein the abutment surface extends out perpendicular to a longitudinal axis of the extension member (see the vertical matching between the parts (31, 43) and the ring (49), also abutment surface extends out an angle from a longitudinal axis of the extension member away from the forward tip. (See the angle portions of the part (32) and the angled through passageway of parts (34, 36) in figures 5 and 6).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the combined invention of Kent, Ghasripoor et al. and Weller to use silver brazing ring to braze the elements of soldering iron tip as taught by Nippert in order to form a tight hermetic seal and also a strong bond that can withstand distortion (Nippert, column 6, lines 33-36).

5. Claims 103,104,107-110, and 125-134 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kent (US Patent No. 3,315,350) in view of Ghasripoor et al. (US Patent No. 5,997,248) as applied to claim 151 above and further in view of Weller

(US Patent No. 5,553,767), Nippert (US Patent No. 4,345,136) and Steine et al. (US Patent No. 4,052,531).

Kent, Ghasripor et al., Weller and Nippert combined do not expressly teach applying flux in the brazing process, reducing or inert furnace atmosphere, heating to brazing temperature of 700 degrees, flux made of AWS 3A type or AWS 3B type flux.

However Steine et al. teaches furnace brazing metal parts using a silver brazing filler (abstract, column 2, lines 38-45), applying flux made of AWS 3A type or AWS 3B type flux (column 1, lines 33-38); heating to brazing temperature of about 700 degrees (column 1, lines 33-38) in an inert or reducing atmosphere using gases selected from nitrogen, hydrogen and Ar gas (Steine et al., column 1, lines 45-49). Steine et al. also teaches applying both the flux and the filler in a paste form (Steine et al. column 1, lines 20-25). Regarding the brazing time the examiner believes since the same brazing furnace atmosphere and conditions as well as same brazing filler and flux material are been used in Steine et al.'s process as applicant's the brazing time would necessarily be substantially the same. Hence the time limitation as claimed in claim 129 is met.

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the combined invention of Kent, Ghasripor et al., Weller and Nippert to use flux and an inert or reducing atmosphere as taught by Steine et al. to inhibit the formation of oxide film and also to promote flow and bonding of the filler metal throughout the joint being brazed (Steine et al., column 1, lines 19-31).

6. Claim 106 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kent (US Patent No. 3,315,350) in view of Ghasripoor et al. (US Patent No. 5,997,248) as applied to claim 151 above and further in view of Weller (US Patent No. 5,553,767), Nippert (US Patent No. 4,345,136) and Pietrocini et al. (US Patent No. 3,894,678).

Kent, Ghasripoor et al., Weller and Nippert combined do not expressly teach filler made of BAG-7.

However Pietrocini et al. teaches brazing sintered iron articles applying a brazing filler between the faying surfaces of the articles and furnace heating to bond the articles together; wherein the filler material is made of BAG-7 (Pietrocini et al., abstract, column 2, lines 11-23, column 4, lines 16-25 and lines 41-48 and table; wherein said brazing filler could be in paste, liquid or powder form (i.e. particulate form); wherein said filler material provides improved braze joint (Pietrocini et al., column 1, lines 60-65).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the combined invention of Kent, Ghasripoor et al., Weller and Nippert to use a filler made of BAG-7 as taught by Pietrocini et al., in order to form strong bond between brazed elements or parts (Pietrocini et al., column 1, lines 60-65).

7. Claims 100, 102, 157, and 158 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kent (US Patent No. 3,315,350) in view of Ghasripoor et al. (US Patent No. 5,997,248) as applied to claim 151 above and further in view of Weller (US Patent No. 5,553,767), and Davis et al. (US Patent No. 4,995,921).

Kent, Ghasripor et al. and Weller combined do not expressly teach applying alcohol a vehicle in the brazing filler.

However Davis et al. teaches applying alcohol as a vehicle in the brazing filler (paste or powder); applying filler by screen printing which necessarily could involve a squeegee or brushing (Davis et al., column 3, lines 15-20) wherein addition of alcohol improves the solubility or organic fluxing agent blend in the filler, improves viscosity, reduce the amount of solvent addition to the filler and eliminates residue forming compounds (Davis et al., column 1, lines 11-22, column 2, lines 62-68 and column 5, lines 13-22).

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the combined invention of Kent, Ghasripor et al. and Weller to use alcohol as a vehicle in the brazing filler as taught by Davis et al. to improve viscosity, reduce the amount of solvent addition to the filler and eliminate residue forming compounds (Davis et al., column 1, lines 11-22, column 2, lines 62-68 and column 5, lines 13-22).

8. Claims 101 and 118 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kent (US Patent No. 3,315,350) in view of Ghasripor et al. (US Patent No. 5,997,248) as applied to claim 151 above and further in view of Weller (US Patent No. 5,553,767) and Rhoads et al. (US Patent No. 3,006,069).

Kent, Ghasripor et al. and Weller combined do not expressly teach the particle size of the silver brazing filler material.

However Rhoads et al. teaches a silver filler material of particles size up to 50 micron for brazing or soldering metal articles and ceramic articles; wherein said finer particle size range is preferred for achieving better seal result (Rhoads et al., figures 1-5, column 1, lines 22-30, column 3, lines 16-25, column 4, lines 36-45)

It would have been obvious to one of ordinary skill in the art at the time the applicants' invention was made to modify the combined invention of Kent, Ghasripoor et al. and Weller to use silver filler material of particles size up to 50 micron as taught by Rhoads et al. in order to achieve better seal at the joint interface between the brazed elements or parts (Rhoads et al., column 3, lines 16-25).

Response to Arguments

9. The examiner acknowledges the applicants' amendment received by USPTO on November 30, 2007. New claims 151-158 have been added, hence claims 99-136 and 151-158 are currently under consideration in the application.

10. Applicant's arguments filed November 30, 2007 have been fully considered but they are not persuasive. The applicant argues that Weller does not teach forming a cap by injection molding. The examiner disagrees. In column 2, lines 18-26, and column 5, lines 54-58, Weller, teaches forming a cap by shaping the sintered particles by compacting in a mold. The examiner interprets this process to be the same as injection molding. The applicant also argues that Weller's items 34 and 36 of figures 3 and 4 respectively do not have a through-passage way but blind holes. The applicant in his

argument failed to point out in his disclosed figures with the forward extension portion or the cap having a through-passage way. The examiner finds the forward extension portion or the cap designated 120 of figure 1 and 120 of figure 4 as also having passages ways ending into a blind spot.

Applicant's argument regarding the iron composition in the particle sintered member is moot in view of the Kent reference.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Art Unit: 1793

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL ABOAGYE whose telephone number is (571)272-8165. The examiner can normally be reached on Mon - Fri 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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